CENTRAL MICHIGAN UNIVERSITY

DEPARTMENT OF PHYSICS

Mt. Pleasant, Michigan 48859
www.cmich.edu/colleges/se/physics/Pages/default.aspx

General University Information

President: George Ross
Dean of Graduate School: David Ash
University website: http://www.cmich.edu
School Type: Public
Setting: Rural
Total Faculty: 1,017
Total Graduate Faculty: 650
Total number of Students: 23,335
Total number of Graduate Students: 6,157

Department Information

Department Chairman: Prof. Christopher Tycner, Chair
Department Contact: Juan Peralta, Graduate Coordinator
Total full-time faculty: 14
Total number of full-time equivalent positions: 17
Full-Time Graduate Students: 15
Female Full-Time Graduate Students: 2
First-Year Graduate Students: 6
Female First-Year Students: 2
Total Post Doctorates: 5

Department Address

Dow Science 203
201 E Ottawa Court
Mt. Pleasant, MI 48859
Phone: (989) 774-3321
Fax: (989) 774-2697
E-mail: physicsadmit@cmich.edu
Website: www.cmich.edu/colleges/se/physics/Pages/default.aspx

ADMISSIONS

Admission Contact Information

Address admission inquiries to: Central Michigan University, Graduate Recruiting, 260 Ronan Hall, Mt. Pleasant, MI 48859
Phone: (989) 774-4444
E-mail: apply@cmich.edu
Admissions website: https://apply.cmich.edu

Application deadlines

Fall admission:
U.S. students: March 15 *Int'l. students*: March 15

Application fee

U.S. students: $60 *Int'l. students*: $60
Applications should be received by March 15, 2019. All applicants are considered for assistantship unless indicated otherwise. The department expects to offer a PhD in Physics soon, in addition to the existing PhD degree in Science of Advanced Materials program. Students are rarely admitted for a spring semester start. Please contact the graduate coordinator for additional information.

Admissions information

For Fall of 2018:
Number of applicants: 33
Number admitted: 5
Number enrolled: 5

Admission requirements

Bachelor's degree requirements: Bachelor's degree in Physics or a closely related discipline from an accredited Science or Engineering program.
Minimum undergraduate GPA: 2.7

GRE requirements

The GRE is recommended but not required.
Mean GRE score range (25th–75th percentile): 50th-60th percentile
GRE scores are not required but recommended for all applicants, but especially for those seeking a graduate assistantship.

Subjective GRE requirements

The Subjective GRE is recommended.
Mean Advanced GRE score range (25th–75th percentile): 40th-60th percentile
A Physics GRE score is not required but recommended for applicants seeking a graduate assistantship.

TOEFL requirements

The TOEFL exam is required for students from non-English-speaking countries.
PBT score: 550
iBT score: 79

Other admissions information

Additional requirements: Three letters of recommendation are requested for applicants seeking an assistantship.
Undergraduate preparation assumed: Coursework that is similar to that offered in CMU's undergraduate physics major. See https://www.cmich.edu/colleges/se/physics/Pages/default.aspx.

TUITION

Tuition year 2018–19:
Tuition for in-state residents
Full-time students: $575 per credit
Part-time students: $575 per credit
Tuition for out-of-state residents
Full-time students: $850 per credit
Part-time students: $850 per credit
All students receiving graduate assistantships receive tuition remission that covers all the required classes in the graduate Physics program.
Credit hours per semester to be considered full-time: 6
Deferred tuition plan:
Health insurance: Not available.
Academic term: Semester
Number of first-year students who received full tuition waivers: 6

Teaching Assistants, Research Assistants, and Fellowships

Number of first-year
Teaching Assistants: 6
Research Assistants: 2
Average stipend per academic year
Teaching Assistant: $13,750
Research Assistant: $13,750
Fellowship student: $13,750
Majority (more than 90%) of graduate students receive full or partial RA support during the summer that provides an ad-

ditional $6,875 in support for the summer for a total for calendar year of up to $20,625. Doctoral assistantships are $25,875 per calendar year.

FINANCIAL AID

Application deadlines

Fall admission:
U.S. students: March 15 *Int'l. students*: March 15

Loans

Loans are available for U.S. students.
Loans are not available for international students.
GAPSFAS application required: No
FAFSA application required: Yes

For further information

Address financial aid inquiries to: CMU Office of Scholarships and Financial Aid, Student Service Court, Mount Pleasant, MI 48859.
Phone: (989) 774-3674
E-mail: CMUOSFA@cmich.edu
Financial aid website: https://www.cmich.edu/ess/OSFA/Pages/Graduate-Students.aspx

HOUSING

Availability of on-campus housing

Single students: Yes
Married students: Yes
Childcare Assistance: No

For further information

Address housing inquiries to: Residence Life, Ronan Hall Room 270, Central Michigan University, Mount Pleasant, MI 48859.
Phone: (989) 774-3111
E-mail: reslife@cmich.edu
Housing aid website: http://www.reslife.cmich.edu

Table A—Faculty, Enrollments, and Degrees Granted

Research Specialty	2017–18 Faculty	Enrollment Fall 2016		Number of Degrees Granted 2016–17		
		Master's	Doctorate	Master's	Terminal Master's	Doctorate
Astronomy	2	2	–	–	–	–
Condensed Matter Physics	6	6	2	–	–	–
Materials Science, Metallurgy	1	2	2	–	–	–
Nuclear Physics	5	8	1	–	–	–
Total	14	18	5	10	3	–
Full-time Grad. Stud.	–	18	5	–	–	–
First-year Grad. Stud.	–	4	1	–	–	–

GRADUATE DEGREE REQUIREMENTS

Master's: A total of 30 credit hours are required, plus a Thesis. Equivalently, Thesis work can be replaced by 6 credit hours of elective courses plus a small research project.

Other Degrees: The Department of Physics participates in an interdisciplinary PhD program in the Science of Advanced Materials (SAM). See https://www.cmich.edu/colleges/se/sam/Pages/default.aspx for details. Students may begin with the M.S. in Physics and enter the SAM Ph.D. program after earning the M.S. degree.

Thesis: A written Thesis is required, along with an oral thesis defense for graduation under the Thesis option.

SPECIAL EQUIPMENT, FACILITIES, OR PROGRAMS

The department of Physics operates X-ray crystallography laboratory, astronomical observatory, polymer physics laboratory, and three experimental nuclear physics laboratories. Faculty and students also access computational resources at the High Performance Computer Center at Michigan State University and the National Superconducting Cyclotron Laboratory.

Table B—Separately Budgeted Research Expenditures by Source of Support

Source of Support	Departmental Research	Physics-related Research Outside Department
Federal government	$2,138,800	
State/local government		
Non-profit organizations		
Business and industry		
Other		
Total	$2,138,800	

Table C—Separately Budgeted Research Expenditures by Research Specialty

Research Specialty	No. of Grants	Expenditures ($)
Astrophysics	1	$60,000
Condensed Matter Physics	6	$500,000
Nuclear Physics	3	$300,000
Total	10	$860,000

FACULTY

Professor

Finck, Joseph E., Ph.D., Michigan State University, 1982. *Nuclear Physics*. Experimental nuclear physics; properties of neutron-rich nuclei near the neutron drip-line; MoNA and LISA neutron detectors.

Fornari, Marco, Ph.D., University of Trieste, 1998. *Condensed Matter Physics*. Electronic structure, thermo-electric materials, ferro- and piezo-electric materials; physics education.

Horoi, Mihai, Ph.D., Institute of Atomic Physics, Bucharest, 1990. *Nuclear Physics*. Theoretical nuclear physics; nuclear shell structure; medical physics.

Jackson, Koblar A., Ph.D., University of Wisconsin-Madison, 1989. *Chemical Physics, Condensed Matter Physics*. Density functional theory-based methods for studying the properties of materials; theory of atomic clusters; chemical physics.

Peralta, Juan E., Ph.D., University of Buenos Aires, 2002. Graduate Coordinator. *Chemical Physics, Condensed Matter Physics*. Magnetic phenomena in molecules and nanomaterials from first-principles; novel theoretical and computational methods for understanding the chemical and physical properties of new materials.

Petkov, Valeri G., Ph.D., University of Sofia, 1991. *Condensed Matter Physics*. X-ray diffraction of materials.

Tycner, Christopher, Ph.D., University of Toronto, 2004. *Astronomy, Astrophysics*. Study of circumstellar disks of hot stars using a variety of ground-based instruments, including long-baseline optical interferometry and spectroscopy.

Williams, Glen, Ph.D., University of Michigan, 1983. *Astrophysics*. Studies of hydrodynamics and radiation transfer in accretion disks of Cataclysmic Variable stars.

Associate Professor

Barone, Veronica, Ph.D., University of Buenos Aires, 2003. *Chemical Physics, Condensed Matter Physics, Energy*

Sources & Environment. Electronic structure calculations based on density functional theory with applications in energy storage, electronic devices, and characterization methods; Computational Materials science. Publication info: https://scholar.google.com/citations?user=MYs9tMUAAAAJ&hl=en&oi=ao

Mellinger, Axel P., Ph.D., Technical University Munich, 1995. *Condensed Matter Physics, Polymer Physics/Science*. Ferroelectret polymers and dielectric nanocomposites: new concepts for piezoelectric sensors and actuators; non-destructive 3D space-charge and polarization tomography; energy harvesting.

Perdikakis, Georgios, Ph.D., National Technical University of Athens, 2006. *Nuclear Physics*. Experimental nuclear physics and nuclear astrophysics, stellar nucleosynthesis, stellar energy production, nuclear structure and reactions, physics with rare isotopes.

Redshaw, Matthew, Ph.D., Florida State University, 2007. *Atomic, Molecular, & Optical Physics, Nuclear Physics*. Precision mass measurements using ions confined in a Penning trap; atomic mass measurements on stable and short-lived isotopes with applications in nuclear physics and nuclear astrophysics, neutrino physics, atomic physics, chemistry and metrology.

Assistant Professor

Estrade, Alfredo, Ph.D., Michigan State University, 2010. *Nuclear Engineering, Nuclear Physics*. Nuclear physics and astrophysics: experiments with radioactive ion beams, r-process nucleosynthesis and X-ray bursts in neutron stars, nuclear structure of unstable isotopes.

Yang, Junjie, Ph.D., Tsinghua University, 2010. *Condensed Matter Physics, Crystallography, Solid State Physics*. Single crystal growth and Neutron Scattering.

DEPARTMENTAL RESEARCH SPECIALTIES AND STAFF

Theoretical

Computational electronic structure. Electronic structure theory of molecules and clusters. Magnetic and electric properties of low-dimensional systems. Barone, Jackson, Peralta.

Computational materials physics. Electronic structure of materials using first-principles techniques. Barone, Fornari, Jackson, Peralta.

Nuclear structure physics. Spectroscopy and nuclear structure; shell model calculations. Estrade, Horoi, Perdikakis.

Physics of circumstellar disks. Observational studies of disks using optical interferometry; computational modeling of radiative transfer in disks. Tycner, Williams.

Rare isotope physics. High-precision mass determinations; transfer reactions. Horoi.

Experimental

Astrophysics. Nuclear Astrophysics. Estrade, Perdikakis.

Condensed Matter Physics. Single crystal growth and characterization. Petkov, Yang.

Materials characterization. X-ray characterization of materials; nanoparticles; disordered materials; rheology and polymer physics. Mellinger, Petkov.

Quantum Materials. Bulk single crystal growth of quantum materials, such as multiferroics, topological insulators, new superconductors and frustrated magnets. Yang.

Rare isotope physics. High-precision mass determinations; transfer reactions. Finck, Perdikakis, Redshaw.

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